Rodenburg

“Valorizing organics to innovative circular green products - Bioplastics”

Presentation for Curcol Webinar 20/4/21

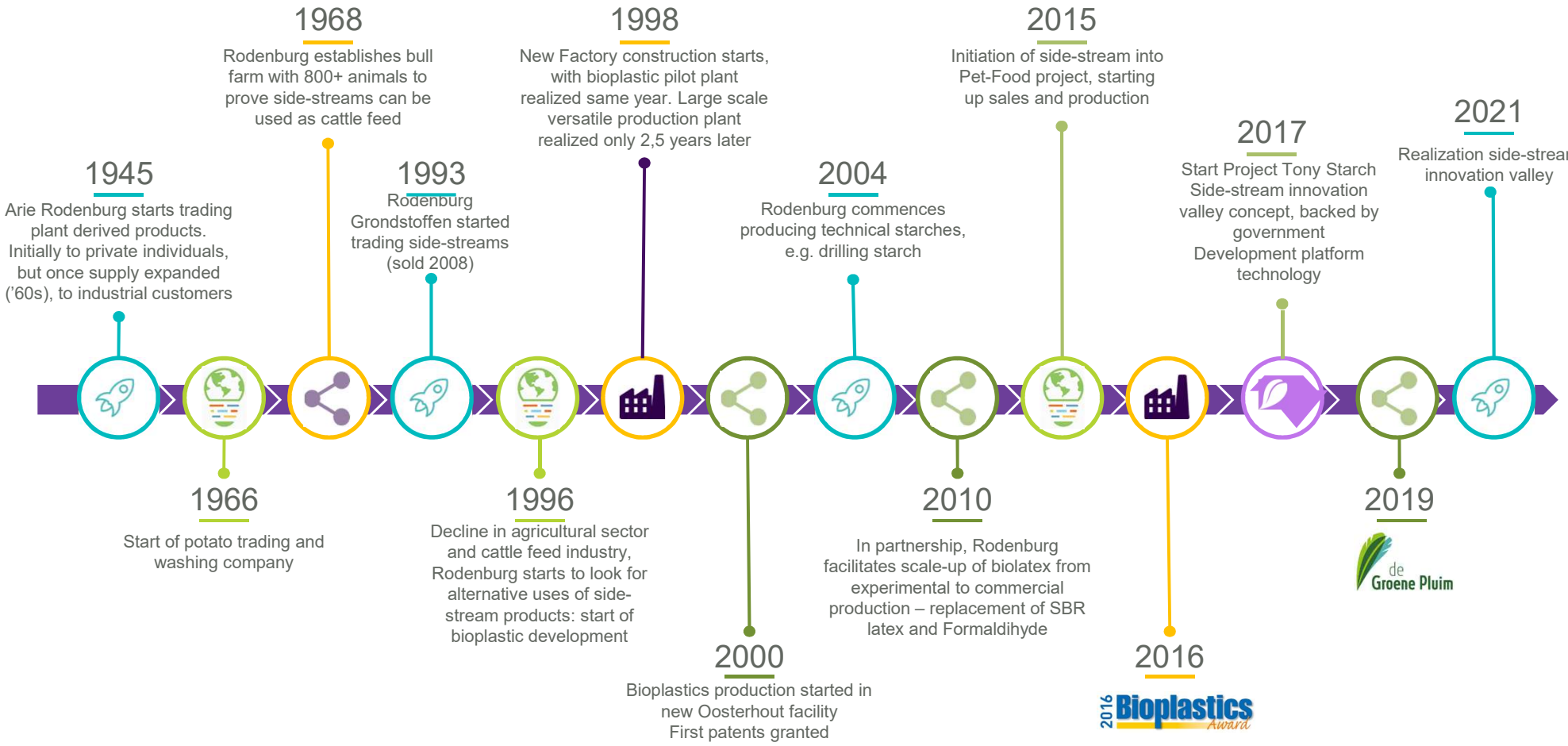
RODENBURG

Interreg North-West Europe CurCol

Optimize agricultural crop use by converting side-streams into high value products

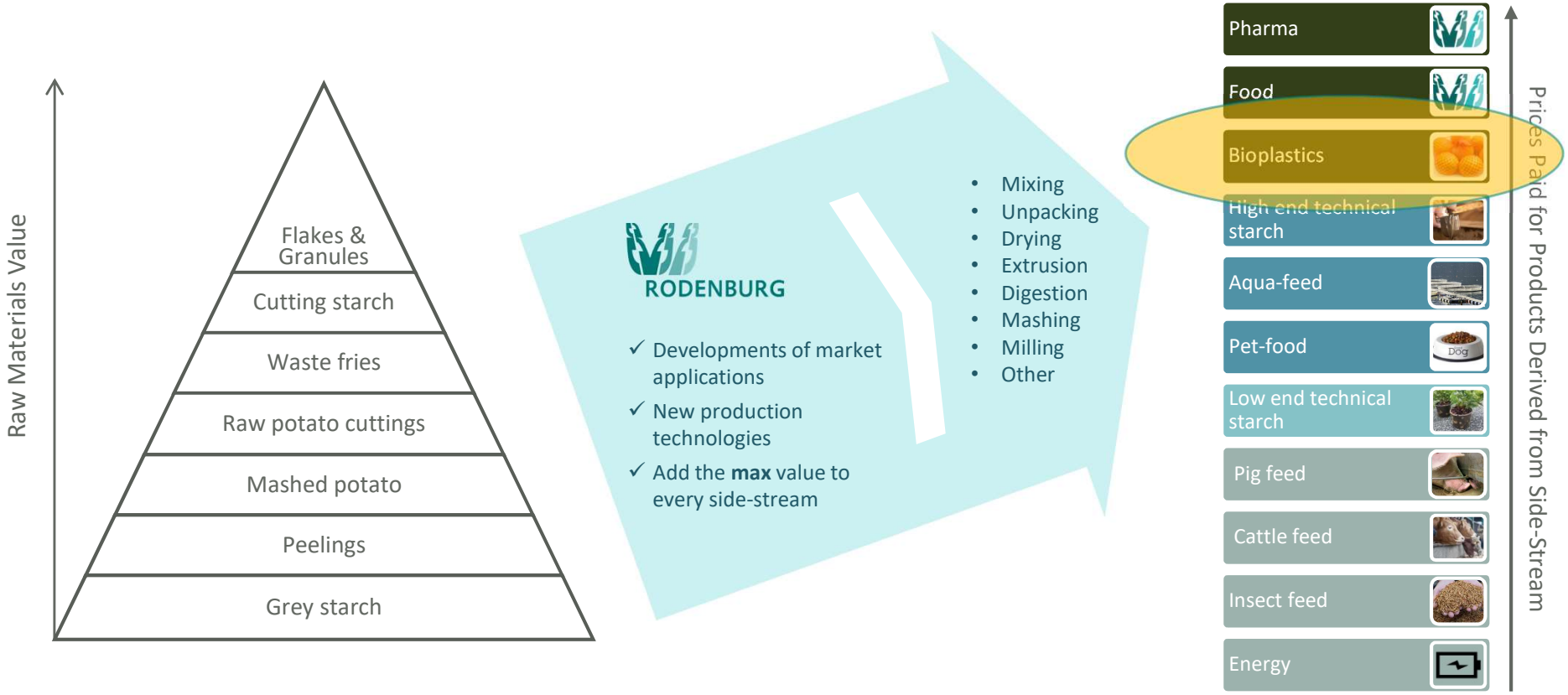

Our vision is clear:
To impact the world with circular bio-based solutions
Our Mission:
To valorize (side stream) products economical and sustainable
Replace oil and chemicals by Biobased
Innovation by Co-Creation

3rd Generation Family Company: Long History in Side-Stream Processing and Innovation



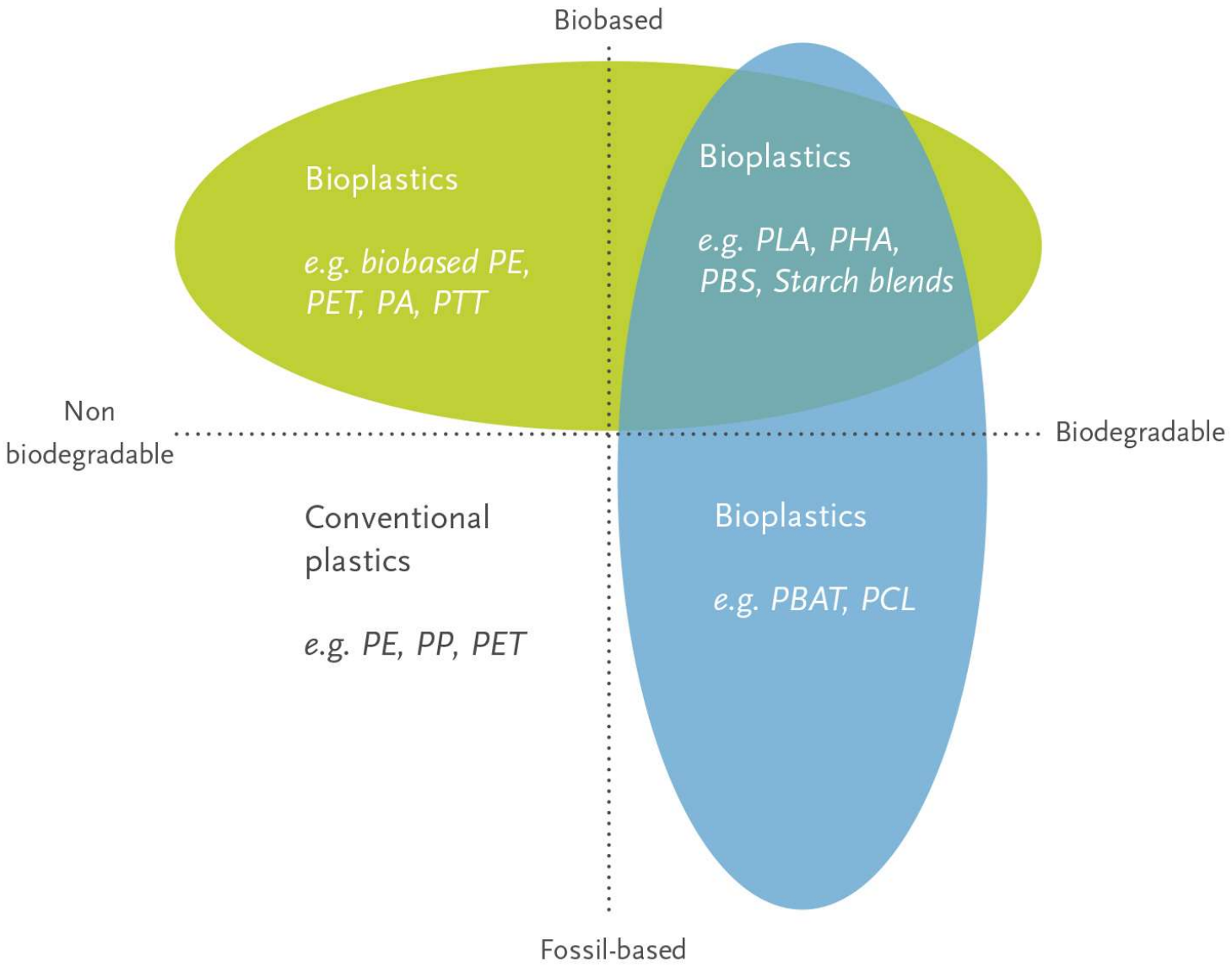
Strong Track Record in Organics Innovation, Processing and Trading

History and Proven Track Record in Potato Side-Stream Innovation



Rodenburg Aim: Drive Innovation to Use Low Value Raw Materials in as High Value Products as Possible


Bioplastics


Biobased
Bioplastics
e.g. biobased PE, PET, PA, PTT
Bioplastics
e.g. PLA, PHA, PBS, Starch blends
Non biodegradable
Biodegradable
Conventional plastics
e.g. PE, PP, PET
Bioplastics
e.g. PBAT, PCL
Fossil-based

Current Product Portfolio

Solanyl compounds

- Biobased, Biodegradable
- Starch based & non-starch based
- Ready for conversion on conventional conversion equipment
- Diverse grades with varying properties: brittleness, strength, flexibility
- Variety of fiber filled options available
- Various conversion techniques served
    - Injection molding
    - Sheet & thermoforming
    - Film blowing, casting or biaxially stretched
    - Tailor-made specialty grades

Optinyl toolbox

- Master batches & carriers
- Master batches for processing or product improvements during conversion steps
- Carrier products for additives e.g. color, fibers
- To be added to end compounds in 1% -15% for conversion in consumer products

Rodenburg offers a Biobased, biodegradable carrier product for colorants to produce masterbatches
Masterbatches can be added to bioplastics during conversion to color products

(Bio)-Plastic Value Chain

Polymerisation	Monomers are combined to create polymers by use of chemical processes. The structure of the monomers and the resulting polymer define the properties of each resin. For example, in the case of PLA, lactic acid is created by fermentation of sugar. The monomers of lactic acid are poymerized, creating a resin
Polymers	
Compounding	Compounding is the process in which the final formulation of the plastic is defined. In this process several polymers are combined with additives to modify the chemical and physical properties of the material, resulting in plastic pellets ready for processing
Plastic Pellets	
Conversion	Converters transform pellets into the final products, like packaging, disposables and other consumer goods. Main conversion techniques include extrusion, thermoforming and injection molding, requiring pellets with different physical and chemical properties for each process.
Plastic Articles	
Brands	Brands commercialise the final product and use the plastic product as packaging and branding tool. In cases the plastic product is the final product.
Final Commercial Product	
Retailers	Sell the final product in the plastic packaging or the final plastic product
Final Commercial Product	
Consumer	End users of the product. In case of packaging and disposables the plastic product is used once and then discarded, requiring a process of collection and recycling

Color Masterbatch

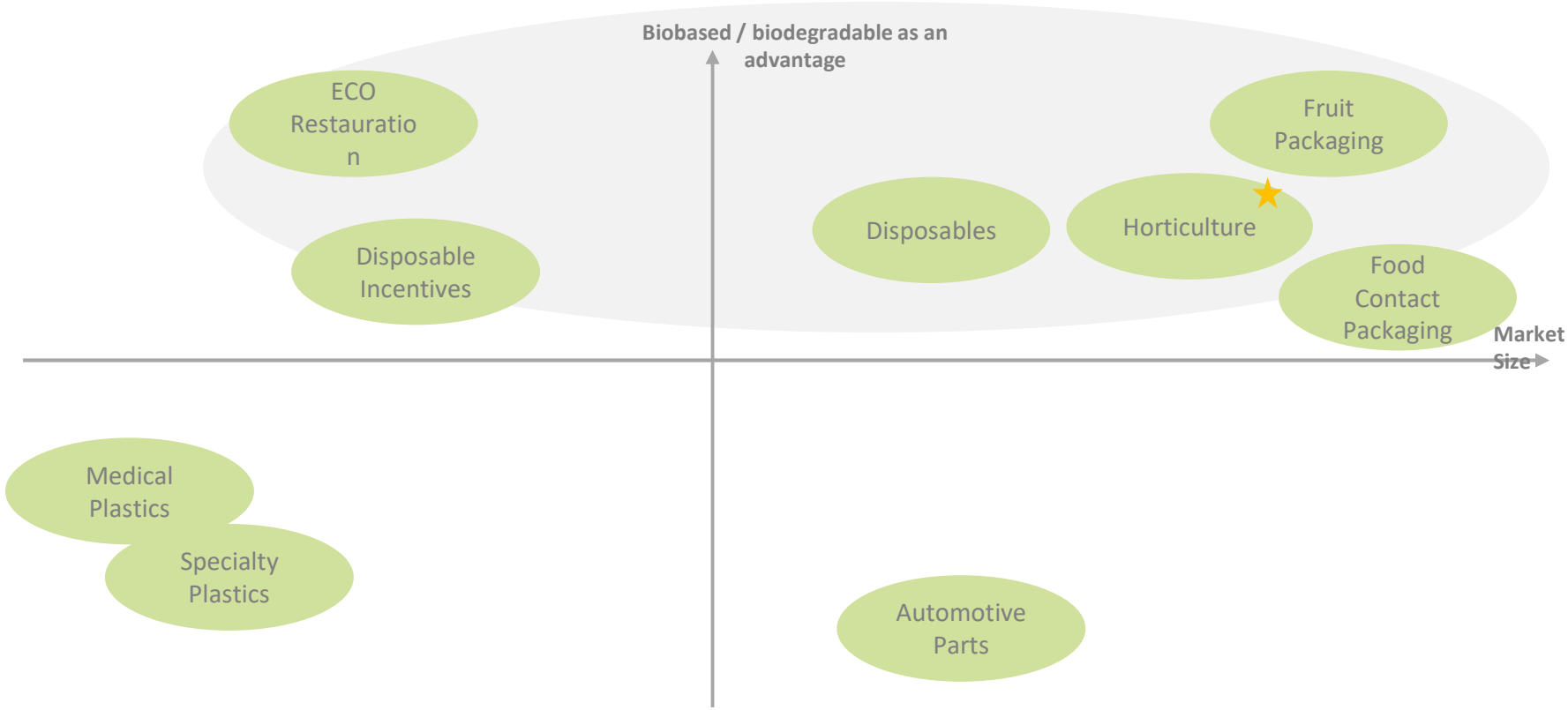
Typical process

Ingredients:
- Starch
- Bio Polymers
- Additives
- ……..

Processing:
- Mixing
- Extrusion
- Drying
- ……..

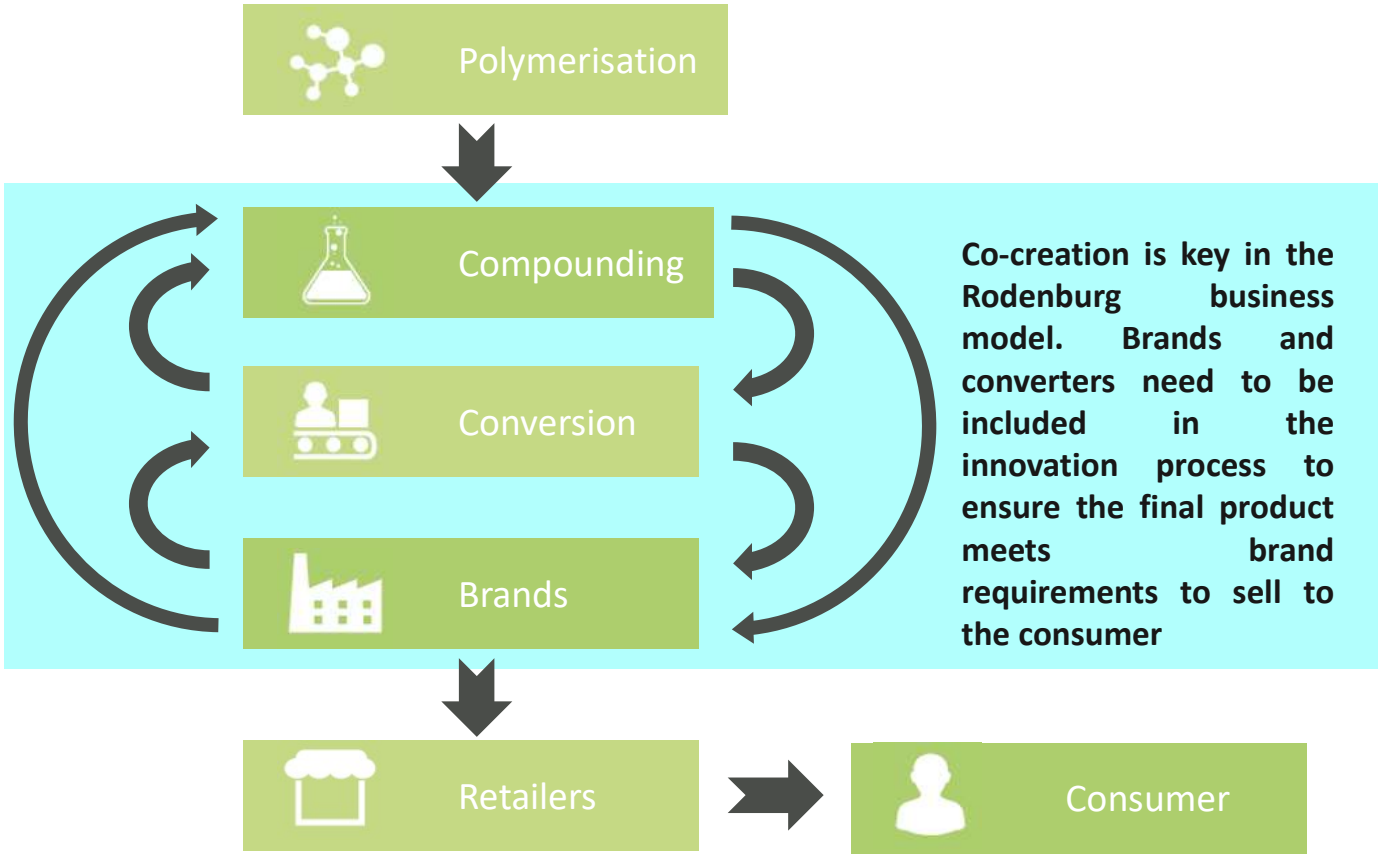
Product:
- Brittleness
- Elasticity
- Strength
- Heat Resistance
- ……..

PMC focus



★ Patent pending for fertilizer releasing bioplastic

Co-Creation is Key



Co-creation is key in the Rodenburg business model. Brands and converters need to be included in the innovation process to ensure the final product meets brand requirements to sell to the consumer

Succesfull Co-Creation

Bioplastic Award 2016


Mars
Mars
Mars
Mars
Mars
Mars


25% MENOS SODIO
Y TODO EL SABOR
CON 6 CEREALES
NATURALMENTE DELICIOSO


TODAS LAS NACEN

Bureau Waardenburg bv
Consultants for environment & ecology

Bureau Waardenburg, together with Rodenburg Biopolymers and GEA 2H Water Technologies, have developed a biodegradable structure that is being used for habitat improvement: Biodegradable EcoSystem Engineering Elements (BESE-elements).

BESE-elements: Biodegradable EcoSystem Engineering Elements

Specifications

The BESE-elements are made from starch derived from potato waste and consist entirely of biopolymers.

In contrast to many other bioplastics, the product undergoes complete breakdown in a natural environment without the need for composting agents or specific temperatures.

Restoration needs and ecosystem functions addressed

Three-dimensional structures can serve as a foundation for nature restoration as damaged ecosystems often lack the following:

- 3D structures for attachment
- Reduction of local currents and waves
- Shelter and protection from predators
- Stability

Potential use of Biodegradable Ecosystem Engineering Elements

The BESE-elements, currently used for stimulating the recovery of mussel beds, have a wide variety of other applications.

The potential uses for this starch-based three-dimensional structure are almost endless. We are just starting to uncover the possibilities of the diverse range of applications, which include:

- Base structure for the recovery of natural mussel beds and oyster beds
- Water purification, sewerage treatment, aquaculture and soil aeration
- Coastal protection
- Ecosystem restoration or protection (e.g. mangrove, seaweed, reefs, wetlands)
- Habitat creation
- Aquaculture (collection of oyster spat, protection for fish and shrimp larvae)

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https://www.youtube.com/watch?v=d5Zj9UZ4uJU

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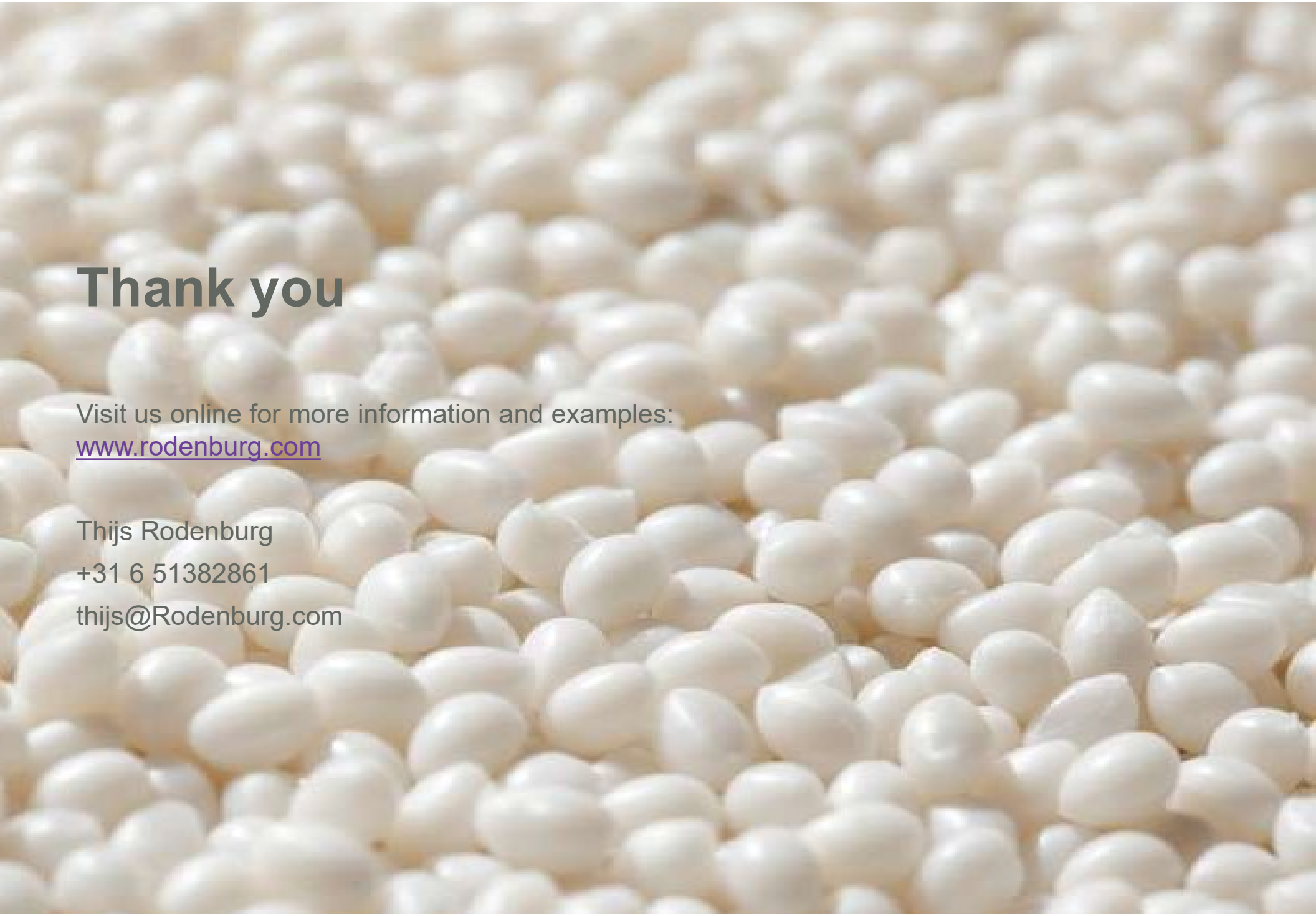

Thank you

Visit us online for more information and examples:
www.rodenburg.com

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